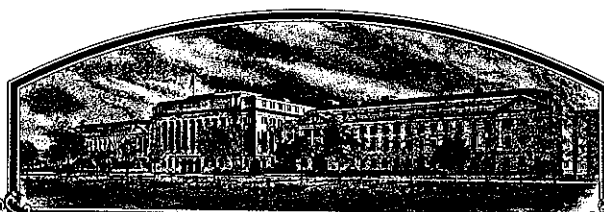


No.

8800232



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

**Western Plant Breeders, Inc.**

Whereas, THERE HAS BEEN PRESENTED TO THE

**Secretary of Agriculture**

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

DURUM WHEAT

'Imperial'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D. C. this 28th day of April in the year of our Lord one thousand nine hundred and eighty-nine.

Attest:

*Kenneth A. Evans*  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Clayton Yentler*  
Secretary of Agriculture

APPROVAL EXPIRES 4-30-85

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

FORM APPROVED, OMB NO. 0581-0055

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426)

# APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

1 NAME OF APPLICANT(S) WESTERN PLANT BREEDERS, INC.		2 TEMPORARY DESIGNATION PH 883-15	3 VARIETY NAME IMPERIAL
4 ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) 8111 TIMBERLINE DRIVE BOZEMAN, MT. 59715		5 PHONE (Include area code) 406-587-1218	FOR OFFICIAL USE ONLY PVPO NUMBER 8800232
6 GENUS AND SPECIES NAME TRITICUM DURUM	7 FAMILY NAME (Botanical) GRAMINEAE		FILING DATE Sept. 1, 1988 TIME 9:45 <input checked="" type="checkbox"/> A.M. <input type="checkbox"/> P.M.
8. KIND NAME DURUM WHEAT	9. DATE OF DETERMINATION OCTOBER 10, 1985		FEES RECEIVED AMOUNT FOR FILING \$ 1800.00 DATE Sept. 1, 1988 AMOUNT FOR CERTIFICATE \$ 200.00 DATE Mar. 13, 1989
10 IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) CORPORATION			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION MARYLAND			12. DATE OF INCORPORATION Sept. 27, 1985
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS KIM C. SHANTZ 227 SO. SMITH RD. SUITE # 104 TEMPE, AZ. 85281 PHONE (Include area code): (602) 967-0028			
14 CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.) b. <input checked="" type="checkbox"/> Exhibit B. Novelty Statement. c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety (Request form from Plant Variety Protection Office.) d. <input type="checkbox"/> Exhibit D. Additional Description of Variety. e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of Applicant's Ownership.			
15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act.) <input checked="" type="checkbox"/> Yes (If "Yes," answer items 16 and 17 below) <input type="checkbox"/> No			
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> Foundation <input type="checkbox"/> Registered <input type="checkbox"/> Certified	
18 DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? <input type="checkbox"/> Yes (If "Yes," give date) <input checked="" type="checkbox"/> No			
19 HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? U.S.A., CERTIFIED SEED, DECEMBER 7, 1987 <input checked="" type="checkbox"/> Yes (If "Yes," give names of countries and dates) <input type="checkbox"/> No			
20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT Kim C. Shantz			DATE 8-26-88
SIGNATURE OF APPLICANT			DATE

8800232

- 14A. IMPERIAL is a spring durum wheat selected from a Western Plant Breeders generated composite cross designated SDP-80. SDP-80 was generated in 1980 by crossing SDP-79 F<sub>2</sub> plants with 28 lines (screened for yield, semolina color, protein and test weight) and 8 named varieties (WestBred 1000D, Cando, Mexicali, Aldura, Calvin, Yavaros-79, Valnova and Mida). The F<sub>2</sub> plants were hand emasculated and pollen was transferred from the above mentioned lines. One to three crosses were made from each pollinator and no more than 2 crosses were made on any one F<sub>2</sub> plant. The bulked F<sub>1</sub> was grown at Conrad, Montana in the summer of 1980. From the F<sub>2</sub> grown at Phoenix, Arizona in 1981, selected heads were bulked and the resulting F<sub>3</sub> was grown at Fresno, California in the winter of 1982. Plant selections made from this bulk were planted as F<sub>4</sub> plots at Phoenix, Arizona in 1983. One plot designated as PH883-15 was harvested in bulk and yield tested in the Desert Durum area in 1984, 1985 and 1986. A plot of PH883-15 was grown at Bozeman, Montana the summer of 1984. Ninety-six heads were selected from this plot and grown as head rows at Phoenix in the winter of 1985. Forty non-segregating rows were bulked together and were used to seed 1/4 of an acre at Bozeman, Montana in the summer of 1985. The resulting seed was designated "Imperial" and used to plant 10 acres of foundation seed production at Phoenix in 1986. No identifiable variants have been found during the multiplication process. Imperial is a stable and uniform cultivar in agronomic appearance and performance across several generations and growing conditions. Agronomic data to support stability is presented in the tables.
- 14B. IMPERIAL is a day length insensitive, spring durum wheat with an average height of 35 inches, which is 5 inches taller than Aldura and 1 inch taller than Mexicali. Imperial most resembles WestBred 1000D, WestBred Turbo and Yavaros-79. Imperial differs from WestBred 1000D in that it is 2.5 inches taller, has consistently better test weight, has higher hard amber vitreous counts and has much brighter semolina color. Imperial differs from Yavaros-79 in that it is much better in lodging resistance, is 2 inches taller, is 1 to 8 days later to flowering (depending on date of seeding), has higher hard amber vitreous counts, has much brighter semolina color, has much higher protein concentration and higher sedimentation values. Imperial differs from WestBred Turbo in that it does not have fading awns, is higher in protein, has blue green foliage at booting (while WestBred Turbo has green), has hairiness of the last rachis internode (while WestBred Turbo does not), has an untwisted flag leaf (while the flag leaf of WestBred Turbo is twisted), has shorter narrower leaves than WestBred Turbo and lower test weight. The above comparisons along with the objective description (13C) show Imperial to be a novel variety of spring durum wheat.
- 14E. Western Plant Breeders, Inc. is the employer of the breeder, Kim C. Shantz, and rightfully, therefore, the owner of "IMPERIAL".



# **Western Plant Breeders**

***"Breeders of WestBred™ Varieties"***

Addendum to Exhibit B of Wheat Application No.8800232, "Imperial"

Imperial differs from WestBred 1000D in that it has no anthocyanin present in the stem while WestBred 1000D does. Imperial has hairs present on the last internode of the rachis while WestBred 1000D does not. Imperial has a waxy bloom of the flag leaf sheath while WestBred 1000D does not. The glume beaks of Imperial are acuminate while WestBred 1000D has glume beaks that are acute. The juvenile plant growth of Imperial is very erect while WestBred 1000D has a semi-erect growth habit. The cheeks on the seeds of Imperial are angular (very pronounced) while those of WestBred 1000D are rounded.

U. S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
LIVESTOCK, MEAT, GRAIN AND SEED DIVISION  
BELTSVILLE, MARYLAND 20785

EXHIBIT C  
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY

WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT

Western Plant Breeders, Inc.

ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)

8111 TIMBERLINE DRIVE  
BOZEMAN, MT. 59715

FOR OFFICIAL USE ONLY

PVPO NUMBER

8800232

VARIETY NAME OR TEMPORARY  
DESIGNATION

Imperial

Place the appropriate number that describes the varietal character of this variety in the boxes below.  
Place a zero in first box (e.g.  or ) when number is either 99 or less or 9 or less.

1. KIND:

1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

1 = SPRING 2 = WINTER 3 = OTHER (Specify) \_\_\_\_\_  1 = SOFT 2 = HARD 3 = OTHER (Specify) \_\_\_\_\_

1 = WHITE 2 = RED 3 = OTHER (Specify) Amber

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

FIRST FLOWERING  LAST FLOWERING

4. MATURITY (50% Flowering):

NO. OF DAYS EARLIER THAN .....  1 = ARTHUR 2 = SCOUT 3 = CHRIS  
 NO. OF DAYS LATER THAN .....  4 = LEMHI 5 = NUGAINES 6 = LEEDS  
7 = Mexicali

5. PLANT HEIGHT (From soil level to top of head):

CM. HIGH  
 CM. TALLER THAN .....  7 = Mexicali  
 CM. SHORTER THAN .....  1 = ARTHUR 2 = SCOUT 3 = CHRIS  
4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING (See reverse):

1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHUR COLOR:

1 = YELLOW 2 = PURPLE

8. STEM:

Anthocyanin: 1 = ABSENT 2 = PRESENT  Waxy bloom: 1 = ABSENT 2 = PRESENT  
 Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT  Internodes: 1 = HOLLOW 2 = SOLID  
 NO. OF NODES (Originating from node above ground)  CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

Anthocyanin: 1 = ABSENT 2 = PRESENT  Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (Specify) \_\_\_\_\_  Flag leaf: 1 = NOT TWISTED 2 = TWISTED  
 Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT  Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT  
 MM. LEAF WIDTH (First leaf below flag leaf)  CM. LEAF LENGTH (First leaf below flag leaf):

## 11. HEAD:

☐ 2 Density: 1 = LAX 2 = DENSE

☐ 2 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE  
4 = OTHER (Specify) \_\_\_\_\_

☐ 4 Awedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

☐ 1 Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED  
5 = BROWN 6 = BLACK 7 = OTHER (Specify): \_\_\_\_\_

☐ 0 ☐ 8 CM. LENGTH

☐ 1 ☐ 5 MM. WIDTH

## 12. GLUMES AT MATURITY:

☐ 3 Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.)  
3 = LONG (CA. 9 mm.)

☐ 3 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)  
3 = WIDE (CA. 4 mm.)

☐ 4 Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED  
4 = SQUARE 5 = ELEVATED 6 = APICULATE

☐ 3 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

## 13. COLEOPTILE COLOR:

☐ 1 1 = WHITE 2 = RED 3 = PURPLE

## 14. SEEDLING ANTHOCYANIN:

☐ 1 1 = ABSENT 2 = PRESENT

## 15. JUVENILE PLANT GROWTH HABIT:

☐ 3 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

## 16. SEED:

☐ 3 Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

☐ 2 Check: 1 = ROUNDED 2 = ANGULAR

☐ 1 Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

☐ 1 Brush: 1 = NOT COLLARED 2 = COLLARED

☐ Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN  
4 = BROWN 5 = BLACK

☐ 2 Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) \_\_\_\_\_

☐ 0 ☐ 8 MM. LENGTH

☐ 0 ☐ 3 MM. WIDTH

☐ 5 ☐ 5 GM. PER 1000 SEEDS

## 17. SEED CREASE:

☐ 2 Width: 1 = 60% OR LESS OF KERNEL 'WINOKA'  
2 = 80% OR LESS OF KERNEL 'CHRIS'  
3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

☐ 2 Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT'  
2 = 35% OR LESS OF KERNEL 'CHRIS'  
3 = 50% OR LESS OF KERNEL 'LEMHI'

## 18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 0 STEM RUST  
(Races)

☐ 0 LEAF RUST  
(Races)

☐ 0 STRIPE RUST  
(Races)

☐ 0 LOOSE SMUT

☐ 2 POWDERY MILDEW

☐ 0 BUNT

☐ 0 OTHER (Specify) \_\_\_\_\_

## 19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 0 SAWFLY

☐ 1 APHID (Bydv.)

☐ 0 GREEN BUG

☐ 0 CEREAL LEAF BEETLE

☐ OTHER (Specify) \_\_\_\_\_

 HESSIAN FLY  
RACES:

☐ 0 GP

☐ 0 A

☐ 0 B

☐ 0 C

☐ 0 D

☐ 0 E

☐ 0 F

☐ 0 G

## 20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	WestBred 1000D	Seed size	WestBred 1000D
Leaf size	" "	Seed shape	" "
Leaf color	" "	Coleoptile elongation	" "
Leaf carriage	" "	Seedling pigmentation	" "

## INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggie and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

TABLE I

Yield in pounds per acre of Imperial and presently grown varieties in Western Plant Breeders' trials in California and Arizona.

<u>Location</u>	<u>Year</u>	<u>Imperial</u>	<u>WestBred Turbo</u>	<u>Mexicali</u>	<u>Aldura</u>	<u>Yavaros-79</u>
Phoenix AZ	1984	8267	9450	8100	8467	8288
	1985	7967	9500	7700	7467	8733
	1986	6407	7378	5125	6655	6779
Yuma, AZ	1984	7178	7425	7700	6683	7178
Casa Grande, AZ	1985	5060	6160	5651	5885	5706
Maricopa, AZ	1986	2870	3266	3407	3290	3430
El Centro, CA	1984	8323	7714	7993	7773	7824
	1985	6629	7601	7560	6615	7358
	1986	5200	5975	5625	5850	6250
Corcoran, CA	1985	<u>7788</u>	<u>8477</u>	<u>7876</u>	<u>7627</u>	<u>7627</u>
Average		6569	7295	6674	6631	6917

TABLE II

Percent protein of Imperial and presently grown varieties in Western Plant Breeders trials.

<u>Location</u>	<u>Year</u>	<u>Imperial</u>	<u>WestBred Turbo</u>	<u>Mexicali</u>	<u>Aldura</u>	<u>Yavaros-79</u>
Phoenix, AZ	1984	13.6	11.1	11.3	12.5	11.2
	1985	15.4	13.6	13.9	14.6	12.9
	1986	13.9	12.5	12.7	13.3	11.9
Yuma, AZ	1984	14.1	11.6	11.9	12.8	11.6
Casa Grande, AZ	1985	15.1	12.8	13.4	13.1	12.8
Maricopa, AZ	1986	17.1	14.5	14.0	14.8	14.2
El Centro, CA	1984	14.4	11.5	12.3	13.0	11.3
	1985	16.2	14.1	14.4	14.9	14.2
	1986	16.6	14.5	14.8	15.5	14.6
Corcoran, CA	1985	<u>16.3</u>	<u>14.9</u>	<u>14.2</u>	<u>14.7</u>	<u>14.1</u>
Average		15.3	13.1	13.3	13.9	12.9

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TABLE III

Plant height in inches of Imperial and presently grown varieties in Western Plant Breeders' trials.

<u>Location</u>	<u>Year</u>	<u>Imperial</u>	<u>WestBred 1000D</u>	<u>WestBred Turbo</u>	<u>Mexicali</u>	<u>Aldura</u>	<u>Yavaros-79</u>
Phoenix, AZ	1984	38	34	37	36	31	33
	1985	40	38	38	36	34	38
	1986	34	--	37	34	31	35
Yuma, AZ	1984	34	31	35	36	30	32
Casa Grande, AZ	1985	33	32	35	37	29	34
Maricopa, AZ	1986	30	--	30	30	25	28
El Centro, CA	1984	34	32	35	33	28	35
	1985	39	34	38	36	36	35
	1986	--	--	--	--	--	--
Corcoran, CA	1985	<u>40</u>	<u>38</u>	<u>39</u>	<u>39</u>	<u>34</u>	<u>39</u>
Average		36	34	36	35	31	34

TABLE IV

Heading date of Imperial and presently grown varieties in Western Plant Breeders' trials.

<u>Location</u>	<u>Year</u>	<u>Imperial</u>	<u>WestBred Turbo</u>	<u>Mexicali</u>	<u>Aldura</u>	<u>Yavaros-79</u>
Phoenix, AZ	1984	3-25	3-25	3-15	3-18	3-19
	1985	4-01	4-02	3-19	3-22	3-24
	1986	3-22	3-27	3-06	3-14	3-20
Casa Grande, AZ	1985	4-15	4-15	4-09	4-14	4-14

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TABLE V

Test weight in pounds per bushel of Imperial and presently grown varieties in Western Plant Breeders' trials.

<u>Location</u>	<u>Year</u>	<u>Imperial</u>	<u>WestBred 1000D</u>	<u>WestBred Turbo</u>	<u>Mexicali</u>	<u>Aldura</u>	<u>Yavaros-79</u>
Phoenix, AZ	1984	61.9	61.3	64.4	63.3	64.0	65.9
	1985	62.3	61.1	64.2	61.9	63.4	65.6
	1986	63.3	----	64.9	63.2	65.3	66.2
Yuma, AZ	1984	61.7	62.8	62.9	62.3	63.7	65.3
Casa Grande, AZ	1985	60.7	59.5	63.2	62.8	63.3	65.3
El Centro, CA	1984	62.0	58.9	63.0	62.7	63.3	64.7
	1985	62.0	59.0	63.4	62.6	62.8	65.5
	1986	62.4	----	63.8	64.9	65.5	66.8
Cocoran, CA	1985	61.6	58.9	62.9	62.7	62.0	64.1
Maricopa, AZ	1986	<u>61.5</u>	<u>----</u>	<u>62.1</u>	<u>63.2</u>	<u>64.0</u>	<u>64.8</u>
Average		61.9	60.2	63.5	63.0	63.7	65.4

TABLE VI

Hard amber vitreous counts of Imperial and presently grown varieties in Western Plant Breeders' trials.

<u>Location</u>	<u>Year</u>	<u>Imperial</u>	<u>WestBred 1000D</u>	<u>WestBred Turbo</u>	<u>Mexicali</u>	<u>Aldura</u>	<u>Yavaros-79</u>
Phoenix, AZ	1984	90	22	67	43	85	58
Yuma, AZ	1984	91	88	93	62	88	77
El Centro, CA	1984	95	81	88	64	90	60
Casa Grande, AZ	1985	<u>98</u>	--	<u>87</u>	<u>86</u>	<u>86</u>	<u>90</u>
Average		94		84	64	87	69

TABLE VII

Percent lodging of Imperial and presently grown varieties in Western Plant Breeder's trials.

<u>Location</u>	<u>Year</u>	<u>Imperial</u>	<u>WestBred Turbo</u>	<u>Mexicali</u>	<u>Aldura</u>	<u>Yavaros-79</u>
Phoenix, AZ	1985	0	0	40	0	0
	1986	0	0	20	0	40
El Centro, CA	1984	0	10	30	15	75
Cocoran, CA	1985	20	30	20	0	30

TABLE VIII\*

Incidence of Black Point in Imperial and presently grown varieties in Western Plant Breeders' trials.

<u>Location</u>	<u>Year</u>	<u>Imperial</u>	<u>WestBred Turbo</u>	<u>Mexicali</u>	<u>Aldura</u>	<u>Yavaros-79</u>
Phoenix, AZ	1984	1.0	2.0	3.0	3.0	2.0
Yuma, AZ	1984	1.5	1.5	2.0	3.5	3.0
El Centro, CA	1984	1.0	1.0	2.0	4.0	1.0

\* Subjective visual rating with 0 = None and 5 = Severe

8800232

**TABLE IX\***

Semolina color of Imperial and presently grown varieties in Western Plant Breeders' Trials.

<u>Location</u>	<u>Year</u>	<u>Imperial</u>	<u>WestBred 1000D</u>	<u>WestBred Turbo</u>	<u>Mexicali</u>	<u>Aldura</u>	<u>Yavaros -79</u>
Phoenix, AZ	1984	1.0	4.0	1.0	3.0	1.0	4.0
	1985	1.0	3.0	1.0	2.0	1.0	2.5
	1986	1.2	---	1.0	2.2	1.2	2.5
Casa Grande, AZ	1985	1.5	3.0	1.0	2.0	1.0	3.0
Maricopa, AZ	1986	2.0	---	1.2	1.5	1.0	3.0
El Centro, CA	1984	1.0	4.0	1.0	3.0	1.0	3.0
	1985	1.0	3.0	1.0	2.0	1.0	3.0
	1986	1.5	---	1.2	2.0	2.0	2.0
Cocoran, CA	1985	<u>1.0</u>	<u>3.0</u>	<u>1.0</u>	<u>2.0</u>	<u>1.0</u>	<u>3.0</u>
Average		1.2	3.3	1.0	2.2	1.1	2.9

\*Subjective visual rating with 1=bright yellow color and  
5=dull, faint yellow color

**TABLE X**

Sedimentation values in millimeters of Imperial and presently grown varieties in Western Plant Breeders trials.

<u>Location</u>	<u>Year</u>	<u>Imperial</u>	<u>WestBred Turbo</u>	<u>Mexicali</u>	<u>Aldura</u>	<u>Yavaros-79</u>	<u>WestBred 881</u>
Phoenix, AZ	1984	21	24	21	18	19	27
	1985	30	30	26	22	25	30
	1986	25	31	28	21	24	34
Casa Grande, AZ	1985	26	27	25	23	24	28
Maricopa, AZ	1986	25	27	28	21	24	28
El Centro, CA	1984	25	20	22	17	21	25
	1985	30	29	25	23	26	34
	1986	30	38	29	22	28	40
Cocoran, CA	1985	<u>29</u>	<u>34</u>	<u>28</u>	<u>24</u>	<u>26</u>	<u>40</u>
Average		27	29	26	21	24	32

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TABLE XI\*

Powdery mildew tolerance of Imperial and presently grown varieties in Western Plant Breeders' trials.

<u>Location</u>	<u>Year</u>	<u>Imperial</u>	<u>WestBred Turbo</u>	<u>Mexicali</u>	<u>Aldura</u>	<u>Yavaros-79</u>
El Centro, CA	1984	1.0	2.0	2.0	3.5	3.5
	1985	1.0	2.0	1.5	3.0	2.5

\*1 = No incidence

9 = Plant covered to the tip of the awns